BASS CREEK WATERSHED (LR03)

Streambank pasturing – unknown WI location

This 109-square miles watershed lies within Rock County west of and adjacent to the Rock River, and stretching from the state line at Beloit to just above Janesville. While predominately agricultural, there are significant urban areas at Janesville and Beloit. We know little about the water quality and use potential of the tributaries to Bass Creek and to the Rock River in this watershed. Stevens Creek may have potential for trout.

Habitat surveys of portions of the watershed were conducted in May 1996. Two reaches of Bass Creek were surveyed and two portions of Stevens Creek were evaluated. The surveys indicated fair to poor streambank habitat with moderate to severe erosion in some areas, possibly due to streambank pasturing and degradation of water quantity and quality in upstream reaches. This watershed ranked high for funding under the state's priority watershed program.

Bass Creek

This watershed is ranked as a second priority for soil loss in Rock County. Rock County Land Conservation Department staff estimate about 3.4 miles of streambank are eroding. In the watershed, more than 59% of the cropland exceeds an average soil loss of about 7.5-8 tons/acre/year. There are 37 barnyards ranked "high" and 74 barnyards ranked "medium" by the barnyard ranking criteria used in the Turtle Creek priority watershed. Most of the problematic barnyards are located along Bass Creek and tributary headwaters in the north and west portions of the watershed. Bass Creek Land Conservation staff believe that this source of sediment and nutrients (barnyard and streambank pasturing) could be reduced through implementation of a priority watershed project. About 68% of the watershed's 63,198 acres are in cropland. This watershed has a high participation level in the Farmland Preservation Program; about 72% of eligible land is enrolled in the program. This watershed has a high susceptibility for groundwater contamination based on WDNR groundwater susceptibility mapping. Bass Creek watershed was selected as an Environmental Quality Improvement Program (EQIP) project. This program, funded by the U.S. Natural Resources Conservation Service (NRCS), targets critical watersheds for implementation of agricultural best management practices that will also protect water resources.

Stevens Creek, straightened

Table 1. Municipalities in the Bass Creek Watershed

Municipality	Water shed	County	1995 Population	2000 Population	Percent Growth 1995 - 2000
T. Beloit	LR03	Rock	6,923	7,038	1.7
C. Beloit	LR03, LR01	Rock	35,891	35,775	-0.3
C. Janesville	LR02, LR03	Rock	56,141	59,498	6.0

Bass Creek

The City of Beloit

The western side of the city of Beloit is at the mouth of this watershed. In the past the city of Beloit has experienced flooding problems on its west side and has recently designed and installed a stormwater detention wetland system to abate this problem.

Recently, the city and town of Beloit, and other surrounding towns, updated the Beloit Sewer Service Area Plan. This plan provides a guideline for locating sewered development for the next 20 years. Population projections used in the update indicated that while residential growth would be steady and perhaps declining during that time period, land was allocated to commercial and industrial development along I-90 to attract new business and spur residential growth, particularly in the Turtle Creek Watershed.

STREAMS

Smallmouth Bass

Bass Creek is classified as a warm water sport fishery, consisting of forage fish and some smallmouth bass, particularly in its lower end. A fish survey of this creek identified: northern pike; stoneroller; carp; bigmouth, common, spotfin, sand and redfin shiners; southern redbelly and blacknose dace; central, bluntnose, brassy, and fathead minnows; creek chub; white and northern hog suckers; brook stickleback; green sunfish; fantail, johnny, banded, and backside darters; and mottled sculpin.

The creek flows through a predominantly agricultural area in its middle and upper portions. The lower reach flows through a wooded floodplain area. Much of the middle and upper portions have been ditched and straightened and there is a minimal buffer between cultivated fields and the streambank. Two small wastewater treatment plants discharge to Bass Creek. A dam at Afton obstructs fish migration up and down Bass Creek. The dam is in very poor condition. Local residents want to retain the dam and its impoundment, but the costs of dam repair, including the required fish migration structures, is beyond their means. From an environmental standpoint, the best thing for water quality and fisheries of Bass Creek would be the removal of the dam.

Northern Pike: Illustration and photo

A 1996 habitat survey that included two stretches of this creek showed cropland on either side of the stream up to the stream banks, drain tiles on agricultural fields, feeding the stream and contributing to high flows, and barnyard runoff and cropland erosion degrading the stream. At the Old Highway 11 crossing, the stream's habitat was rated as "good to fair" and at the Dorner Road crossing, habitat was rated as "fair." There are springs and seeps in the area and as a result the water is usually clear.

The Rock County Land Conservation Department believes best management practices would work well in this watershed because the acceptance of conservation practices in this area has been good in the past. About 3.4 miles of streambank have an erosion problem. Bass Creek has been designated an Exceptional Resource Water under the state's antidegradation program as it supports the redfin shiner, a fish on the state's threatened and endangered species list.

Redfin shiner

Stevens Creek is a small warm water stream tributary to Bass Creek near Hanover. The stream is very turbid and its flow sluggish in its lower reaches. While flow above State Highway 11 is much stronger, obvious erosion from agricultural cropland and pasture use affects the stream's water quality. The fishery consists of forage fish although fisheries managers believe the stream could sustain a trout fishery if protected. Like Bass Creek, the water quality of Stevens Creek is affected by cropland erosion, barnyard runoff, and streambank erosion. A May 1996 habitat evaluation characterized the stream's habitat at the Mineral Point Road crossing as "poor." Twenty cattle were observed standing in the stream. The stream's habitat at the Snyder Road crossing was also considered "poor." The entire 8-mile length of Stevens Creek is on the 303(d) list of impaired waters.

Resources of Concern

WDNR's Heritage Resources Database indicates that the following water-dependent endangered, threatened or special concern species and/or communities have been sighted in this watershed within the last 20 years.

Queen snake

Table 2. Endangered, Threatened or Species of Special Concern

Species Common Name	Latin Name	Habitat
Redfin Shiner	*Lythrurus Umbratilis*	Bass Creek
Blanding's Turtle	*Emydoidea Blandingii*	Turtle Creek Wildlife Area
Queen Snake	*Regina Septemvittata*	Turtle Creek
Ozark Minnow	*Notropis Nubilus*	Little Turtle Creek, Ladd Creek, Darien Creek
Slender Madtom	*Noturus Exilis*	Darien Creek

Wet-Mesic Prairie: including blazing stars and goldenrods

Table 3. Endangered, Threatened or Species of Special Concern

Plant Community	Location	Indicator Species
Wet-Mesic Prairie	Orfordville Railroad Prairie	Prairie Cordgrass, Bluejoint, Big Bluestem, Blazing Star, Flowering Spurge, Michigan Lily, Cowbane, etc.
Oak Opening, Oak Savanna	Orfordville Oaks	Bur Oak, Black Oak, Red Cedar, Shagbark Hickory
Wet-Mesic Prairie	Kessler Railroad Prairie	More than 100 Native Plant Species
Southern Sedge Meadow	Kessler Railroad Prairie	Big and Little Bluestem, Prairie Dropseed, Indian Grass and Cord Grass; some Fen Species

Burr oak

Plant Community	Location	Indicator Species
Southern Dry Forest	Hanover Woods	Black Oak, Burr Oak, White Oak, Black Cherry;
Wet Prairie	Tracy Meadows	Diverse Vegetation, Relatively Undisturbed
Dry Prairie	Afton Railroad Prairie	Silky Aster, Prairie Coreopsis, Ohio Spiderwort, Leadplant, Narrow-Leaved Puccoon
Southern Mesic Forest	Bill Hill Park	Sugar Maple, Northern Red Oak, Spring Beauty, Dutchman's Breeches, Yellow Lady's Slipper, White Trout Lily.

Yellow lady's slipper

RECOMMENDATIONS

1. Rock County should enact and enforce a construction site erosion control ordinance to protect water quality in unincorporated portions of Rock County. [2]
2. The Lower Rock River Basin Team should conduct a formal stream classification of Stevens Creek including an assessment of major sources of polluted runoff that may be affecting water quality.[1]
3. The Lower Rock River Basin Team should conduct appraisal monitoring of the Bass Creek watershed, including Bass, Stevens, Markham and Fisher creeks, to determine the extent of water quality threats and problems due to sources of polluted runoff.[1]
4. The dam on Bass Creek at Afton should be removed if the owner and local residents are unable to fund necessary dam repairs; if repaired, adequate provision for fish migration up- and downstream must be made.[1, 2]
5. Bass Creek Watershed should be considered a high priority for selection as a nonpoint source priority watershed project.[1]

White trout lily

1. These recommendations are a basis for work planning or other decisions, which must be approved by the appropriate DNR division administrator (the recommendations are a starting point for the work planning process.
2. These recommendations are advisory to the public, local governments, lake management organizations, and other groups or agencies. These recommendations are not binding. No statutory or codified requirements exist.

ACKNOWLEDGMENTS

The authors would like to thank Louis Bobolz, David Botts, Don Bush, David Marshall and Mike Sorge for their contribution to this report.

Shooting star close up

Photographs of fish are from MN DNR (Nothern Pike) and Konrad Schmidt (redfin shiner-modified). All plant photos were taken from Virginia Kline's Vegetation of Wisconsin collection, except for bur oak (UW Botany Dept teaching photographs by Mike Clayton). Stream photos are from SCR files. Illustrations were drawn by Virgil Beck for the WI DNR (Smallmouth Bass, Northern Pike).

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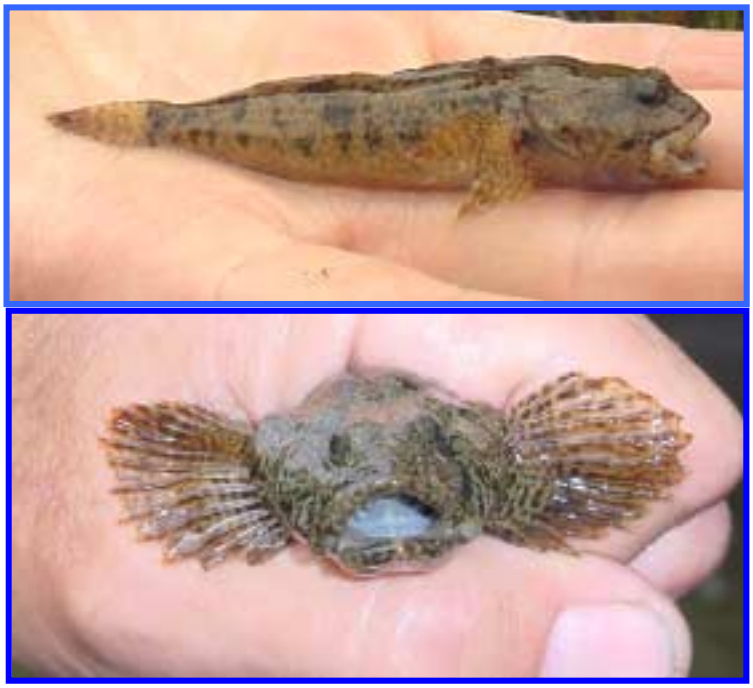

Mottled sculpin

Table 4 Streams in Bass Creek Watershed (LR03)

Stream Name	WBIC	County	Length (Miles)	Existing Use (Miles)	Potential Use (Miles)	Supporting Potential Use (Miles)	Current Codified Use	303(d) Status	Use Impairment		Data Assess-ment	Data Level	Trend	References
									Source	Impact				
Bass Creek	0795800	Rock	22	WWSF/22	Same	Part - Thr	ERW	N	HM, CL, BY, NPS, PSB, SB, PSM, DRDG, DD	FLOW, HAB, SED, TURB, TEMP, DO, NUT, MIG, MIG	M	B3 H2	U	4, 10, 17, 78, 80
Fisher Creek	0796500	Rock	4	WWFF/4	Same	Part	WWSF*	N	NPS, URB, DEV, CE	HAB, SED, TURB, TEMP, DO NUT	M	B3 H2	S	4, 10, 17, 78, 80
Markham Creek	0796400	Rock	5	WWFF/5	WWSF/5	Not	WWSF*	Y	NPS, URB, DEV, CE	HAB, SED, TURB, TEMP, DO NUT	M	B3 H2	S	4, 10, 17, 78, 80
Stevens Creek	0796300	Rock	8	WWFF/8	WWFF/8	Part	WWSF*	Y	HM, CL, PSB, SB, BY, DD, NPS	TURB, HAB, TEMP, SED, FLOW, DO	M	B3 H2	S	4, 10, 17, 78, 80
Unnamed Streams			19											

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Table 5. Lakes in the Bass Creek Watershed (LR03)

Lake Name	County	Town, Range, Section	WBIC	Water shed	Surface Area (Acres)	Max Depth (ft)	Mean Depth (ft)	Lake Type	Winter kill	Acc-ess	SH	Hg	Mac	LMO	TSI	TSI Class	Lake Plan Prot	P Sens	Impairment		Comments
																			Source	Impact	
Afton Gravel Pits	Rock	T02NR12E S28	0773900	LR03	34	27	--	SE	N	--	--	GA	--	--	--	--	--	I Ins	NPS	HAB, ACC	pike, bass, panfish